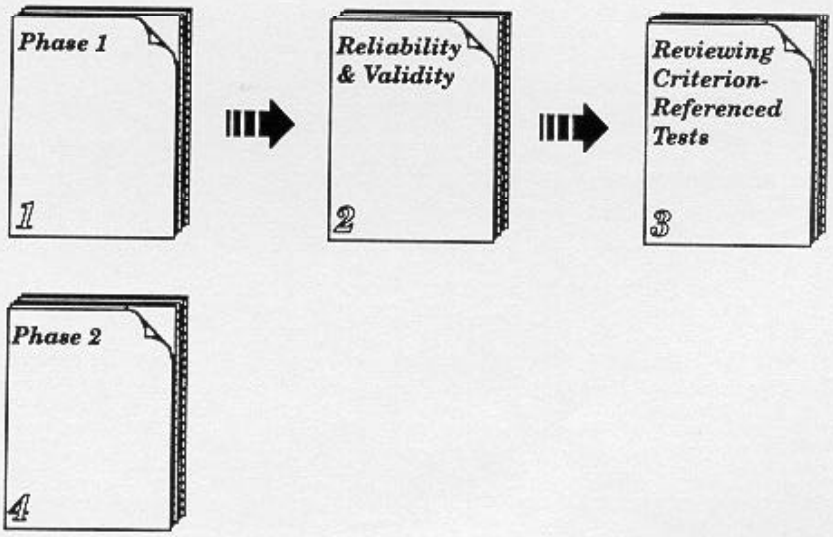
TRAINING EVALUATOR COURSE

M O D U L E S I X

S T U D E N T W O R K B O O K

Evaluation of Student Learning

MODULE 6 LESSONS



U.S. Army Training and Doctrine Command
Training Development and Analysis Directorate
Ft. Monroe, VA 23651-5000

SEPTEMBER 1992

PROPONENT ▼.....

TRADOC Schools, Integrating Centers, and HQ TRADOC developed the materials that make up the Training Evaluator Course as a team effort. We acknowledge the work of all individuals and organizations that directly participated in this effort. We thank them for their support they provided and congratulate them on a job well done.

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The proponent for this document, and the Training Evaluator Course, is the Commander, Headquarters and Training Command (HQ TRADOC). Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commander, HQ TRADOC, ATTN: ATTG-CD, Fort Monroe, VA 23651-5000. Make telephone inquiries by calling DSN 680-5590 or COMM (804) 728-5590.

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INTRODUCTION

PURPOSE OF WORKBOOK

This workbook is one of a series of workbooks that, with other training materials, is used in the Training Evaluator Course. The course was developed primarily for new training evaluators assigned to the Directorate of Evaluation and Standardization (DOES) in each TRADOC school. Although designed primarily for DOES personnel in TRADOC schools, the training may be beneficial to other personnel who have training evaluation responsibilities.

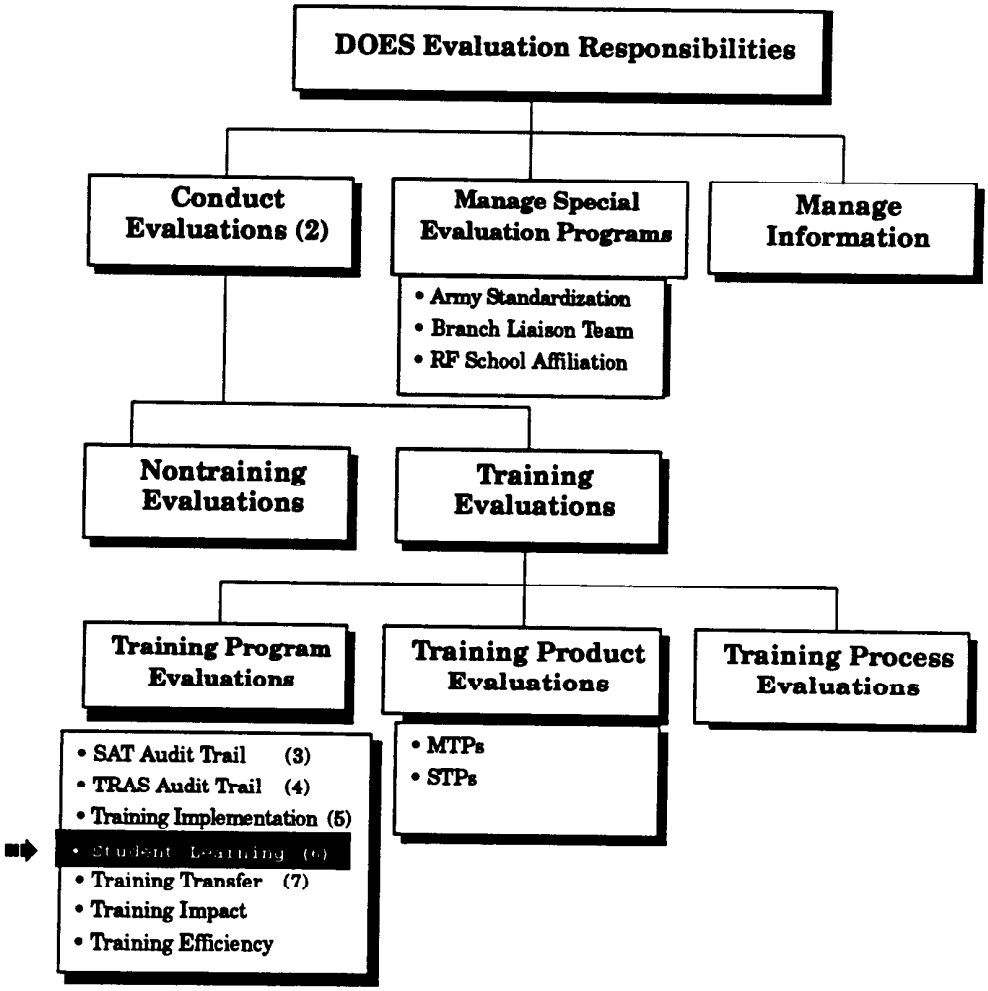
The Training Evaluator Course consists of a series of training modules. Each module will train you on a specific task or tasks that DOES training evaluators perform. This workbook will be your guide as you work through Module 6. The other modules that make up this program are shown in the table below.

Modules In the Training Evaluator Course

1. Introduction to DOES and Training Evaluation
2. The Evaluation Process
3. Evaluation of SAT Audit Trail Documents
4. Evaluation of TRAS Audit Trail Documents
5. Evaluation of Training Implementation
6. **Evaluation of Student Learning**
7. Evaluation of Training Transfer to the Job

This module of the Training Evaluator Course provides training on conducting an evaluation of student learning for a course at your school. Figure 1 below shows the relationship of this module, which is highlighted, to the other modules in the course. The figure also shows how the DOES responsibility of evaluating student learning relates to the evaluation responsibilities of DOES.

Figure 1
DOES Evaluation Responsibilities with Course Module Numbers



HOW TO USE THE WORKBOOK

This workbook and all other materials associated with the Training Evaluator Course were designed for you to use in a classroom situation with a course manager available. This course manager will help guide you through the various activities, provide feedback to you on your work, answer your questions, and provide any other assistance you require.

Although we recommend that you complete this workbook in a classroom situation, it can stand alone; you can complete it without assistance from a course manager, much like a correspondence course. If you work through the workbook by yourself, ignore the references made to course managers in the workbook. If you are using the workbook in a classroom situation with a course manager available, as it is intended to be used, follow all directions.

Following this introduction, you will complete a series of activities, including short reading assignments. To reinforce the readings, you will be required to complete a short exercise following some readings. In these exercises, you will be asked to answer questions or perform certain skills discussed in the reading. After each exercise, the course manager will provide you feedback on how well you did on the exercise.

When you complete the workbook, you will be directed to see the course manager, who will provide you an End-of-Module Exercise. After you complete the End-of-Module Exercise, the course manager will check your work. The course manager will give you feedback on the exercise and then either direct you to do additional exercises in this module or provide materials for the next module.

As you have probably noticed, there is blank space on the left side of each page in this workbook. You can use this space for writing notes if you desire.

Take your time working through the workbook. If you have any questions, don't hesitate to ask the course manager.

MODULE OVERVIEW

One of your responsibilities in DOES is to evaluate the training programs (courses) conducted within your school. As we discussed in Module 1 of this course, there are different types of evaluations. Training program evaluations can be categorized based on these types. The six types of training program evaluations are shown in the table below. This module will focus on the third type of evaluation, which involves evaluating student learning.

Table 2
Types of Training Program Evaluation

TYPE OF EVALUATION	KEY QUESTION (addressed by the evaluation)
1. Audit Trail	Was training developed using a Systems Approach?
2. Implementation things	Are they training the right and are they training them well?
3. Student Learning	**Did the students learn?**
4. Transfer	Does training transfer to the job?
5. Impact	Does training meet unit needs?
6. Efficiency	Was training efficient?

In a schoolhouse setting, the ultimate determination of whether or not a student is viewed to have mastered the training inherent in a program is based almost solely on that student's ability to perform on a test. The student should be requested to demonstrate competency on a Criterion-Referenced Test (CRT). The question the DOES evaluator must ask is: "Did the student learn what he was supposed to learn if he passed the test?" The determination of this involves a number of interrelated variables. This module will provide some general guidelines for evaluating student learning.

■ BASIC DEFINITIONS

Criterion – The standard by which something is measured. In test validation, it is the standard against which test instruments are correlated to indicate the accuracy with which they predict human performance in some specific area. In evaluation, it is the measure used to determine the adequacy of a product, process, or behavior.

Criterion-Referenced Test (CRT) – An examination that establishes whether or not a unit or soldier performs the task to a present standard. Performance is measured as a "Go" or a "No Go" against a prescribed standard or set of standards. Also called a mastery test.

Knowledge-Based Test – An examination that asks for recall of names or labels, single propositions or facts, or collections of facts organized as connected discourse. The larger interconnected items of information are often referred to as knowledge or bodies of knowledge. Also called a knowledge test.

Performance-Oriented Test – An evaluation of the actual execution of a task using the conditions under which it will be discharged and the absolute standards for acceptable completion. Also called a performance test or performance-content test.

Norm-Referenced Test – An examination that grades a student based on the performance of other students. These are not normally used in training.

■ DISCUSSION

The definitions listed above are important in studying Module 6 and discussing testing in the U.S. Army. Theoretically, Knowledge-Based Tests and Performance-Oriented Tests may be either norm-referenced or criterion-referenced. Norm-referencing grades a student in comparison with other students. Criterion-referenced grading is based on a prespecified performance standard. TRADOC Regulation

350-7 prescribes the SAT principles, which are applicable to **all** training regardless of function, intended target audience, or training site, and that the regulation applies to **all** training programs developed or conducted by TRADOC. It further states that **"SAT requires evaluation of training graduates by criterion-referenced testing**. Via TRADOC Regulation 350-7, TRADOC has mandated that tests will be performance-oriented or performance-based. This module will provide some general guidelines for evaluating student learning on criterion-referenced tests.

LESSON 1 ▼.....

This lesson reviews some important principles involving the Systems Approach to Training (SAT), and how the process, if followed properly, will help to ensure efficiency in student learning. It discusses the importance of Terminal Learning Objectives (TLO) and their relationship to Criterion Referenced Tests (CRT). It keys on performance-oriented training and performance testing.

LESSON 2 ▼.....

The importance of Reliability and Validity in judging CRTs is discussed. Each is defined and their relationship to each other explained. The Eighty Percent Rule is introduced to help DOES evaluators organize test results to begin to judge student learning.

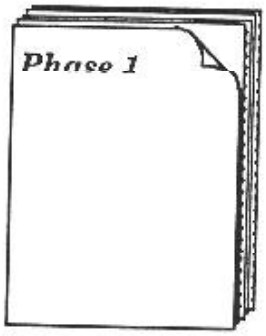
LESSON 3 ▼.....

The methods of reviewing CRTs are introduced. Job Aid 6d is offered as a guide in evaluating the CRTs for clarity, following the SAT process, and helping judge reliability and validity.

LESSON 4 ▼.....

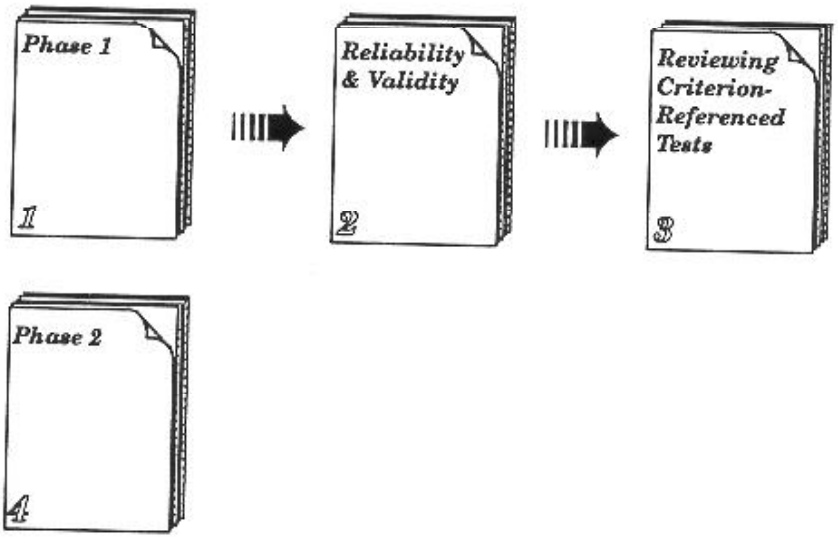
Interviews of students and instructors complete Phase 2. Job Aids 6e and 6f are introduced as samples of questions that may be used to obtain important data from students and instructors that will indicate probable causes of problems in student learning.

LESSON 1



Phase 1

MODULE 6 LESSONS



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■ LESSON INTRODUCTION

In this lesson you will review part of the task analysis process. Emphasis will be placed on familiarization with task analysis documents and TRADOC policies in the development of course materials. As you may already know, methods vary in learning analysis and course design. The DOES evaluator must be flexible enough to judge proper documentation and procedures even though both will vary from school to school,and possibly, within different departments of a single school. The requirement then is for the DOES evaluator to understand what the SAT process is supposed to do and not the step-by-step explanation of how to do it or document it.

■ LESSON OBJECTIVE

The training objective for this lesson of Module 6 is shown below. This objective includes: the **action** you will be able to perform at the conclusion of this lesson, the **conditions** under which you will be able to perform this action, and the **standards** to which you will be able to perform the action.

Conditions - Given the job aids in Job Aid 6, this workbook, any other references required, and the Terminal Learning Objectives (TLO) and Criterion Referenced Tests (CRT) for a course;

Action - Determine if CRT tracks with the TLO.

Standards - You must determine whether the match of the conditions, actions, and standards is acceptable.

■ LESSON ACTIVITIES

In this lesson you will become familiar with the Systems Approach to Training (SAT) procedures that create Terminal Learning Objectives (TLO). The significance of TLOs will be discussed and their use in Criterion-Referenced Tests (CRT).

CRITICAL TASK SELECTION BOARD

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A Critical Individual Task Selection Board must be held for any Military Occupational Specialty (MOS) or officer branch in the Army system. The board usually uses a TRADOC organizational model and a set of task selection Standard Operating Procedures (SOP) which are enforced by a panel chairman. After this panel selects the Critical Individual Task Inventory, it is staffed and submitted to command authority for approval.

When signed, this Critical Individual Task Inventory becomes the official MOS/branch code/Area of Concentration (AOC) task list from which all school training programs and products are developed. Changes to the approved task list should be documented in the audit trail, and all organizations responsible for developing training programs and products from the task list must be notified.

If you find that the tasks trained in residence have been altered and do **not** agree with the approved task list, check to see that any changes went through the proper local procedures for approval. If the changes were **not** approved, you have a situation in which the school's training may **not** match information in the Soldiers Manual (SM), Military Qualifications Standards Manual (MQSM), Reserve Component (RC) training, etc. This is a major problem which needs to be a part of your final DOES report.

INDIVIDUAL TASK ANALYSIS

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Individual Task Analysis is a process that identifies all the actions and decisions required to perform an identified task. Task Analysis helps determine the content of all testing,

training programs, and individual training products that your school produces. It is not simple. Quite often Task Analysis is done poorly and treated lightly.

Task Analysis may be done by having a Subject Matter Expert (SME) describe in detail how to perform the task on the job. There are other methods, such as having an education specialist (i.e., analyst) describe the task after observing its performance by an SME or after interviewing an SME. This includes the steps involved in performing the task, the conditions under which the task is performed, the standards to which the task must be performed, skills and knowledge required to perform task steps, documentation of references, critical safety/environmental factors, and performance measures. This information must be recorded in a format that training developers can use to create future training and training products.

TASK ANALYSIS WORKSHEET (TAW)

Each collective and individual task is analyzed with the results placed on a **Task Analysis Worksheet (TAW)** or similar document. Some schools have developed local forms for recording task analysis results based on TRADOC Pam 351-13.

In most situations, you evaluate individual task analysis by checking entries on the TAWs which your school uses.

When the SME is filling out a TAW, the goal is to have the entire task performance and all enabling skills identified the way they are really done on the job in a wartime environment. The task analysis must also detail the entire performance with no questions left on how some part of the task is performed. You may find that the TAWs are not referenced when training programs and training products are being developed! This is a serious shortcoming that must be reported or resolved by the DOES evaluator.

Pages 19 & 20 of Job Aid 3 is a checklist that will assist any training evaluator in judging task analysis. Pages 37 and 38 of Module 3 discuss the checklist questions.

COURSE DESIGN

Develop objectives: The overall mission of the training strategy for a task is described in a training objective. An objective must exist for each critical individual task selected for resident training. TLOs are the very foundation of the systems approach to developing instruction. This is an early step in the design process of SAT and is the identification of the end product: **What the school expects the student to be able to do after exposure to the school's instruction.** All further development efforts are based on the objectives. Note Job Aid 6a which provides guidance on evaluating TLOs.

Learning Analysis makes the transfer from the job environment to the training environment. Learning Analysis (which is often part of the Design Phase of SAT) determines what skills and knowledge are needed to perform each step in the objective, the skills and knowledge required for mastery, the methods and media suitable for presentation, and training site selection. Enabling Learning Objectives (ELO) are objectives that support the TLO and consist of conditions, actions, and standards. In other situations they may even be TLOs. When a TLO is so large that it encompasses knowledge and skills that make up other objectives, these objectives are ELOs. Not all TLOs have ELOs. When a TLO is broken down into one or more ELOs, the curriculum developer is saying, "This is the easiest and most efficient way for the student to learn the TLO. The ELOs should contain the skills and knowledge necessary to complete the TLO—no more, no less. **ELOs do not have to be tested, but upon the discretion of the test developer may be tested.** Usually ELOs are not tested separately in the Criterion Referenced Tests (CRT) but are evaluated indirectly when the TLO they are subordinate to is tested. Quite often ELOs are assessed separately via a Practice Exercise (PE) prior to the test.

Criterion Referenced Test (CRT): A sufficient number of criterion test items are written to ensure the TLO is adequately evaluated. A CRT tracks with the conditions of the TLO, calls for the same behavior as the TLO, and requires no irrelevant behaviors. Each CRT should have a rating/scoring device that is applicable to the behavior being assessed.

In summary, Course Design is a scheme used to organize training events into a desired sequence of presentation. The TLOs are sequenced in the order in which they are to be trained, relationship to other TLOs, resourcing, course design, and other factors. Also includes such elements as provisions for remediation, retesting, spaced practice, and diagnostic testing. You may wish to review pages 44–49 of Module 3, and refer to pages 21–22 of Job Aid 3 for guidance on evaluating learning analysis and course design.

EVALUATION POINTS

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A CRT must match the TLO in conditions, action, and standards. Every TLO must be included on a CRT.

You as the evaluator of student learning need to ensure that the learning objectives are properly written, developed from Critical Tasks, and tested. Turn to Job Aid 6a. This checklist will assist you in judging the written TLOs. Job Aid 6b provides guidance for judging the necessity of any ELO. Next study Job Aid 6c. Improperly written TLOs/ELOs should be identified. These objectives cannot be tested effectively if they are not written well. Those subjects or TLOs that are not approved IAW the SAT audit trail should be annotated for your final report. Be sure your report annotates TLOs, ELOs, or subjects being tested that are not approved IAW the SAT audit trail. You should also identify approved TLOs that are not being tested. Indicate the reasons the school gave for testing unapproved material or for not testing the approved material. The next step is to study the approved TLOs in the course.

■ PRACTICE EXERCISE

For each of the following situations, indicate which Criterion-Referenced Tests (CRT) are appropriate or not for measuring the conditions, actions, and standards required by the Terminal Learning Objective (TLO). For those CRTs that are not appropriate indicate what the problem(s) are with the CRT. Assume that the TLOs are written correctly. Minimum criteria for acceptable performance is to answer eight of ten correctly.

1. **TLO:** Given an M203 grenade launcher and one round of 40MM ammunition, load the weapon within 10 seconds.

   CRT: List the steps to be taken to load an M203 grenade launcher.

   Appropriate _____ Not Appropriate _____

2. **TLO:** From memory write the names of the continents. Six out of seven must be correct.

   CRT: Using a world map, write the names of all the continents correctly.

   Appropriate _____ Not Appropriate _____

3. **TLO:** Given a Task Analysis Worksheet (TAW) and a task of your choice, perform a task analysis. Show all the major steps of the task, the sequential relationships between steps, the initiating cues, and the task completion indicators.

   CRT: Use a Task Analysis Worksheet (TAW) and a task from the following list: Write a Sports Story, Write a Memorandum, or Conduct an Interview. Perform a task analysis showing all major steps of the task, the relationships between steps, the initiating cues, and the task completion indicators.

   Appropriate _____ Not Appropriate _____

4. **TLO:** Given a list of words and a standard American dictionary, locate the words in the dictionary by page number correctly.

   CRT: Using a list of words provided and a standard American Dictionary, locate the words by page number without error.

   Appropriate _____ Not Appropriate _____

5. **TLO:** Given a news topic and all references, write a straight news story IAW standards supplied in the Applied Journalism Handbook.

   CRT: Using the news topic provided and all references, write a news story that has no misspelled words or grammatical errors.

   Appropriate _____ Not Appropriate _____

6. **TLO:** Given a list of numbers, find the average. Your answer must be correct to the nearest hundredth.

   CRT: Be able to explain how to compute the average, using a given list of numbers.

   Appropriate _____ Not Appropriate _____

7. **TLO:** From memory write the names of the eight parts of speech. Only one error is allowed.

   CRT: Without references, write the names of the parts of speech. Seven out of eight must be written correctly.

   Appropriate _____ Not Appropriate _____

8. **TLO:** Given an operator's manual, tools, and a HMMWV with a flat tire, change the tire IAW the operator's manual.

   CRT: Using all necessary materials, list the steps taken to remove a flat tire; then change it IAW the operator's manual.

   Appropriate _____ Not Appropriate _____

9. **TLO:** Given a .50 HBM2 caliber machine gun, the appropriate Technical Manual (TM), and a Go/No-Go gauge, set the headspace IAW the TM.

   CRT: Given a .50 caliber HBM2 machine gun, the appropriate Technical Manual (TM), and a Go/No-Go gauge, set the headspace in three minutes IAW the following standards:

   1. The weapon must be cleared before setting the headspace.

   2. The headspace will be set such that the Go end of the Go/No-Go gauge will enter the T-slot to the center ring of the gauge and the No-Go end of the gauge will not enter.

   Appropriate _____ Not Appropriate _____

10. **TLO:** Given two vehicles, one disabled with a weak battery, a set of booster cables, and each vehicle's Technical Manual (TM), start the engine of the disabled vehicle IAW procedures outlined in the TMs.

CRT: Given two vehicles, one disabled with a weak battery, a set of booster cables, and each vehicle's Technical Manual (TM), start the engine of the disabled vehicle IAW procedures outlined in the TMs. The following standards must be met:

1. Both transmissions must be in neutral
2. Handbrakes in both vehicles must be set.
3. Booster cables must be attached positive-to-positive and negative-to-negative.

CAUTION: DO NOT cross cables (e.g., positive-to-negative) because of danger of the battery exploding, fire, and acid.

4. Slave vehicle is started first.
5. Attempt to start disabled vehicle.
6. Disconnect booster cables without crossing cables.

Appropriate _____ Not Appropriate _____

ANSWERS TO THE PRACTICE EXERCISE

1. **TLO:** Given an M203 grenade launcher and one round of 40MM ammunition, load the weapon within 10 seconds.

   CRT: List the steps to be taken to load an M203 grenade launcher.

   Appropriate _____ Not Appropriate __X__

The CRT does not match the TLO in terms of action. The TLO asks to "load" the weapon while the CRT asks to "list" the steps.

2. **TLO:** From memory write the names of the continents. Six out of seven must be correct.

   CRT: Using a world Map, write the names of all the continents correctly.

   Appropriate _____ Not Appropriate __X__

The CRT does not match the TLO in terms of conditions and standards. The CRT gives the student a world map, the TLO says from memory. The CRT says to name all (seven of seven) while the TLO says six of seven.

3. **TLO:** Given a Task Analysis Worksheet (TAW) and a task of your choice, perform a task analysis. Show all the major steps of the task, the sequential relationships between steps, the initiating cues, and the task completion indicators.

   CRT: Use a Task Analysis Worksheet (TAW) and a task from the following list: Write a Sports Story, Write a Memorandum, or Conduct an Interview. Perform a task analysis showing all

major steps of the task, the relationships between the steps, the initiating cues, and the task completion indicators.

Appropriate _____ Not Appropriate __X__

The CRT does not match the TLO in terms of conditions. The CRT asks you to select a task from a list while the TLO says a task of your choice. It is quite possible that the test-taker is not a subject matter expert in any of the three tasks the CRT offers for choices.

4. **TLO:** Given a list of words and a standard American Dictionary, locate the words in the dictionary by page number correctly.

CRT: Using a list of words provided and a standard American Dictionary, locate the words by page number without error.

Appropriate __X__ Not Appropriate _____

5. **TLO:** Given a news topic and all references, write a straight news story IAW standards supplied in the Applied Journalism Handbook.

CRT: Using the news topic provided and all references, write a news story that has no misspelled words or grammatical errors.

Appropriate _____ Not Appropriate __X__

The CRT does not match the TLO. The standards of the CRT indicate no misspelled words or grammatical errors while the standards of the objective are IAW the "Applied Journalism Handbook."

6. **TLO:** Given a list of numbers, find the average. Your answer must be correct to the nearest hundredth.

CRT: Be able to explain how to compute the average, using a given list of numbers.

Appropriate _____ Not Appropriate __X__

The CRT does not match the TLO in terms of action. The CRT asks you to "explain how to compute" and the TLO asks you to actually "compute."

7. **TLO:** From memory write the names of the eight parts of speech. Only one error is allowed.

CRT: Without references, write the names of the parts of speech. Seven out of eight must be written correctly.

Appropriate __X__ Not Appropriate _____

8. **TLO:** Given an operator's manual, tools, and a HMMWV with a flat tire, change the tire IAW the operator's manual.

CRT: Using all necessary materials, list the steps taken to remove a flat tire; then change it IAW the operator's manual.

Appropriate _____ Not Appropriate __X__

The CRT does not match the TLO in terms of action. The CRT asks you to "list steps and change a tire" while the TLO asks you to only "change the tire."

9. **TLO:** Given a .50 HBM2 caliber machine gun, the appropriate Technical Manual (TM), and a Go/No-Go gauge, set the headspace IAW the TM.

CRT: Given a .50 caliber HBM2 machine gun, the appropriate Technical Manual (TM), and a Go/No-Go gauge, set the headspace in three minutes IAW the following standards:

1. The weapon must be cleared before setting the headspace.
2. The headspace will be set such that the Go end of the Go/No-Go gauge will enter the T slot to the center ring of the gauge and the No-Go end of the gauge will **not** enter.

Appropriate _____ Not Appropriate __X__

The CRT does not match the TLO in terms of standards. The CRT sets a time standard which the TLO does not require. Obviously, there must be a time constraint for the CRT due to school resourcing constraints, but a time standard should not be added to the CRT statement.

10. **TLO:** Given two vehicles, one disabled with a weak battery, a set of booster cables, and each vehicle's Technical Manual (TM), start the engine of the disabled vehicle IAW procedures outlined in the TMs.

CRT: Given two vehicles, one disabled with a weak battery, a set of booster cables, and each vehicle's Technical Manual (TM), start the engine of the disabled vehicles IAW procedures outlined in the TMs. The following standards from TM procedures must be met:

1. Both transmissions must be in neutral.
2. Handbrakes in both vehicles must be set.
3. Booster cables must be attached positive-to-positive and negative-to-negative.

CAUTION: DO NOT cross cables (e.g., positive-to-negative) because of danger of the battery exploding, fire, and acid.

4. Slave vehicle is started first.
5. Attempt to start disabled vehicle.
6. Disconnect booster cables without crossing cables.

Appropriate __X__ Not Appropriate _____

■ LESSON REVIEW AND SUMMARY

During this lesson we have discussed the following key points.

1. The Critical Individual Task Inventory signed by someone with command authority from a school drives the development of school training products and programs for an MOS/branch code/AOC.

2. Task Analysis must be completed for each Critical Task and recorded on a TAW. It is the school's responsibility to maintain these TAWs as part of the SAT audit trail.

3. An objective must be developed for each Critical Task and must usually meet the performance requirements of the Critical Task from which it was developed.

4. Objectives define what the school expects the student to be able to do after exposure to the school's instruction.

5. Learning Analysis identifies skills and knowledge needed to perform each step in a task and leads to the development of ELOs.

6. A CRT is written for each TLO. The CRT must track with the conditions, actions, and standards of the TLO.

7. ELOs are subsets of a TLO. They are usually "tested" indirectly when the TLO they support is tested.

■ END-OF-LESSON EXERCISE

For each of the following situations, indicate which Criterion-Referenced Tests (CRT) are appropriate or not for measuring the conditions, actions, and standards required by the Terminal Learning Objective (TLO). For those CRTs that are not appropriate indicate what the problem(s) are with the CRT. Assume that the TLOs are written correctly. Minimum criteria for acceptable performance is to answer eight of ten correctly.

1. **TLO:** Given an M16A2 service rifle with a stoppage, the soldier will take immediate action and fire the weapon in one minute.

   CRT: Given an M16A2 service rifle, a magazine, and five M199 dummy rounds, the soldier will load the magazine of five rounds in the kneeling-firing position and attempt to fire the weapon. The instructor will announce that the M16A2 did not function. The soldier will take immediate action to clear the M16A2 and will attempt to fire again, chambering a fresh round each time he takes the action. The soldier must successfully get the M16A2 in an operational condition in one minute or less.

   Appropriate _____ Not Appropriate _____

2. **TLO:** Given a 1:50,000 map of an unfamiliar area you are occupying, a lensatic compass, straightedge, coordinate scale, pencil, and two terrain features visible from your location and identifiable on the map, determine the 100,000 meter square identification letters and six digit grid coordinates of your location within 100 meters of the actual grid coordinates.

CRT: Given a 1:50,000 map of an unknown location you are occupying, a lensatic compass, straightedge, coordinate scale, pencil, and two terrain features visible from your position and identifiable on the map, determine the 100,000 meter square identification letters and the eight digit coordinates of your location to within 10 meters of the actual grid coordinates within seven minutes.

Appropriate _____ Not Appropriate _____

3. **TLO:** Given a zeroed .50 caliber HBM2 machine gun on a ground mount, 50 4:1 linked .50 caliber rounds, an assistant gunner, and an engageable ground target during daylight, place effective fire on targets IAW FM 23-65 (Browning Machinegun Caliber .50 HB, M2) and OHC 6-9C (Engage a Point Target with Fixed Fire).

CRT: Given a zeroed .50 caliber HBM2 machine gun on a ground mount, 50 4:1 linked .50 caliber rounds, an assistant gunner, an engageable ground target during daylight, and a fire command to engage a target, IAW FM 23-65 (Browning Machinegun Caliber .50 HB, M2) and OHC 6-9C (Engage a Point Target with Fixed Fire) the soldier will:

1. Estimate the range to the target.
2. Set the rear setting to the estimated range.
3. Manipulate the traversing and elevating (T&E) mechanism until the correct sight picture is achieved on the center of mass of the target.
4. Fire a short burst and observe the impact of the rounds.
5. Manipulate the T&E mechanism to correct any errors.
6. Continue engaging the target until he is directed to cease fire or to shift fire, or until the target is destroyed.

7. If the target is mobile, make corrections by manipulating the T&E mechanism as required to maintain fire on the target.

Appropriate _____ Not Appropriate _____

4. **TLO:** Given a Meal Ready to Eat (MRE), three heat tablets, matches, a canteen cup, and one canteen of water, prepare the MRE IAW Specifications: MIL-F-10805D (Instructions on the Ration Heating Container).

CRT: Given a Meal Ready to Eat (MRE), three heat tablets, a canteen cup, and one canteen of water, prepare the MRE in a safe and sanitary manner.

Appropriate _____ Not Appropriate _____

5. **TLO:** Given an M16A2 rifle, zero the rifle.

CRT: Given an M16A2 rifle on a 25 meter firing range, one magazine, 24 rounds of 5.56 MM ammunition, battlesight zero target, sandbag support, shot group analysis card, and a firing data card, place the center of a shot group at the "X," 2.4 centimeters below the Canadian bull's-eye, and have the group touch or fall within a three-center diameter circle center on the X.

Appropriate _____ Not Appropriate _____

6. **TLO:** Given an M548 with winch and complete basic issue items (BII), TM 9-2350-247-10, a suitable anchor, a capable assistant, and a stated situation to warrant the use of a winch, operate the winch IAW TM 9-2350-247-10.

CRT: Given an M548 with winch and complete basic issue items (BII), TM 9-2350-247-10, a suitable anchor, a capable assistant, and a stated situation to warrant the use of a winch, operate the winch to successfully perform the mission without injury to personnel or vehicle IAW TM 9-2350-247-10.

Appropriate _____ Not Appropriate _____

7. **TLO:** Given a poncho, a guy line, string or communication wire, erect a one-man shelter IAW FM 21-75 (Combat Skills of the Soldier) and FM 21-76 (Survival).

CRT: Given a poncho, a guy line, and a string or communication wire, erect a one-man shelter with the help of a capable assistant in ten minutes.

Appropriate _____ Not Appropriate _____

8. **TLO:** Given an M9 Nine MM service pistol, fieldstrip and reassemble the service pistol IAW TM 1005A-10/1 (Service Pistol Marksmanship Manual).

CRT: Given an M9 Nine MM service pistol and small-arms maintenance equipment, fieldstrip and reassemble the pistol IAW TM 1005A-10/1. The parts are to be laid out on a clean surface and in order of disassembly. Reassembly is in reverse

order. Once assembled, the safety mechanism is engaged. The pistol must function properly. There is no time limit. The soldier must explain and demonstrate the proper method of thoroughly cleaning all parts of the service pistol, identification of the points of lubrication, and the level of disassembly authorized for the operator (i.e., fieldstripping).

Appropriate _____ Not Appropriate _____

9. **TLO:** Given a field environment, under simulated combat conditions, during daylight and darkness, practice noise, light, and litter discipline IAW FM 21-75 (Combat Skills of a Soldier).

CRT: The soldier, under simulated combat conditions, during daylight and under cover of darkness, is a member of an element conducting a tactical mission. The soldier must demonstrate methods of muffling noisy equipment, dulling shiny equipment, and shielding light. The soldier must open and eat the contents of an MRE and properly stow all MRE trash.

Appropriate _____ Not Appropriate _____

10. **TLO:** A soldier is provided 27 sandbags, an entrenching tool, a large pile of sand, and will be wearing a helmet and a flak jacket. The soldier must build a sandbag wall three sandbag-lengths long, 1 1/2 sandbag-lengths wide, and three sandbag-lengths high within 30 minutes IAW FM 5-103 (Survivability).

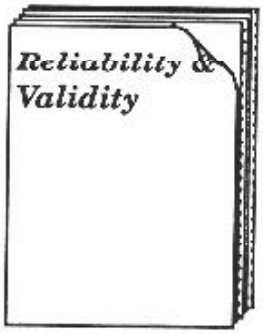
CRT: A soldier is provided 27 sandbags, an entrenching tool, a large pile of sand, and will be wearing a helmet and a flak jacket. The soldier must build a sandbag wall three sandbag-lengths long, 1 1/2 sandbag-lengths wide, and three sandbag-lengths high within 30 minutes IAW FM 5-103 (Survivability). The following standards must be met:

1. The sandbags must be filled uniformly and 3/4 full with the sand.
2. The choke cord on the sandbags must be tied.
3. The bottom of the bags must be tucked in.
4. The first row of sandbags must be placed sidewise with the choke cords facing inboard.
5. The second row of sandbags must be placed length-wise lying across the first row.
6. If time allows, cracks between the sandbags must be filled in with mud or dirt.

Appropriate _____ Not Appropriate _____

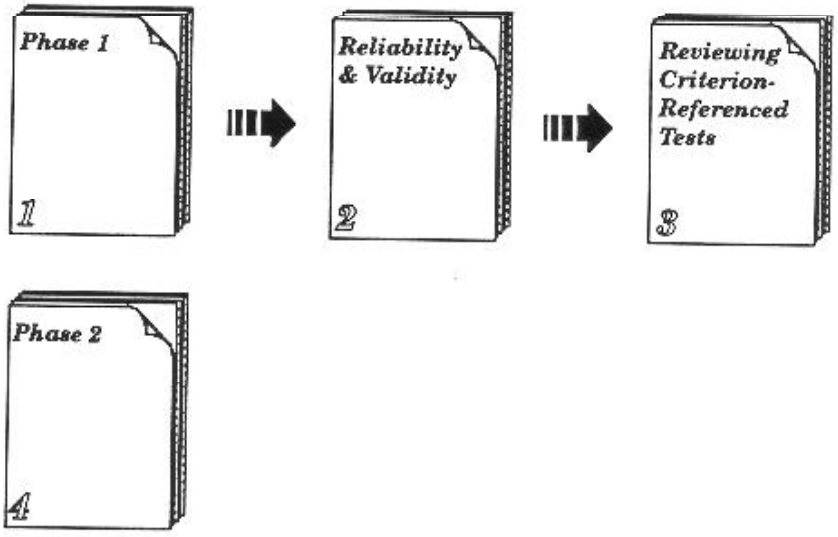
LESSON

2



Reliability & Validity

MODULE 6 LESSONS



U.S. Army Training and Doctrine Command
Training Development and Analysis Directorate
Ft. Monroe, VA 23651-5000

SEPTEMBER 1992

■ LESSON INTRODUCTION

This lesson provides an overview of evaluating student learning for criterion-referenced testing.

It is now time for the DOES evaluator to turn his attention to the Criterion-Referenced Tests (CRT). If your evaluation of the SAT process in Phase 1 is correct, those who score high on the CRTs developed from approved TLOs should be better at the MOS/branch code/AOC than those who scored low. Based upon your work in the first phase, you may assume that the:

1. MOS/branch code/AOC performance specifications accurately reflect the performance required on the job.

2. TLOs and ELOs accurately reflect the MOS/branch code/AOC performance specifications.

It is now necessary to determine whether the CRTs accurately reflect the TLOs. If they do, then the course is teaching students the skills they need to perform on the job in their MOS/branch code/AOC.

■ LESSON OBJECTIVE

The training objective for this lesson of Module 6 is shown below. This objective includes: the **action** you will be able to perform at the conclusion of this lesson, the **conditions** under which you will be able to perform this action, and the **standards** to which you will be able to perform the action.

Conditions - Given the job aids in Job Aid 6, this workbook, and any other references required; and CRT (and validation data)

Action - You will assess validity of CRT.

Standards - Determine whether correct procedures used.

■ LESSON ACTIVITIES

RELIABILITY ▼.....

Reliability refers to the extent to which a test yields consistent scores: If a test has a high reliability, the same people should fail each time they take the test, while those who pass should do so consistently (assuming that no learning has intervened between test administrations). On a test that has low reliability, on the other hand, people of similar ability on the task may vary widely in their test scores, with some passing and some failing each time they take the test. If a test is highly unreliable, the same individual may pass it one day and fail it the next. The retest must be taken before forgetting takes place. Thus, it is essential that Criterion-Referenced Tests (CRT) be reliable. The results of using an unreliable CRT will ruin accurate evaluation of the objectives.

VALIDITY ▼.....

Validity answers the question: **Does the test measure what it is supposed to measure?** Our concern in the Army training arena is that these CRTs accurately measure successful task performance by testing the objectives.

CONTENT VALIDITY

Content validity is the degree to which a measure captures a learning objective. Determining Content Validity is probably the most used way of assessing whether or not a performance-oriented CRT measures what it is supposed to measure. To truly check content validity on a CRT, one must systematically check each test item to determine if it is measuring what the associated objective says it should. If all questions measure what the objective calls for, the test is content valid; if they do not, it isn't. Content validity, then, is a matter of the extent to which a CRT corresponds with its objectives. Content validity is best viewed as an absolute measurement. From an absolute point of view, the results of a CRT suggest that either an individual does possess the ability to adequately perform the task which a objective defines, or he doesn't. If the test questions and objectives are precisely matched, the test is content valid. The questions must be representative of all aspects of their associated objectives.

PREDICTIVE VALIDITY

Predictive Validity is the degree to which scores on a test accurately forecast performance on the job. Predictive Validity compares students' results on the CRT with their results on some other measure taken at a later time—when they are actually on the job for which they've been trained. The CRT and the other measures may be separated by six months or more for predictive validity. Typical types of measures used in predictive validity (predicted by the CRT) include:

- Supervisor ratings of on-the-job performance.
- Other existing tests.
- Job sample tests.
- Peer ratings of on-the-job performance.

JUDGING RELIABILITY AND VALIDITY

The first step is to determine that the test accurately reflects the requirements of the objective. Large numbers of failures on a test may be an indicator of an invalid test or a training deficiency. Ideally, you will need to review the records of at least four graduated classes and from 100 to 150 students. This should be done for all CRTs in the course. However, if time will not allow you to check all CRTs, pick an appropriate sample.

EIGHTY PERCENT RULE

A fair standard in validating tests is to use is the **Eighty Percent Rule**: Did 80% of each sample pass this CRT 100% of the time? Look for trends. If only one of the four classes missed the standard, check two more classes. If both of those classes attained the 80% standard, then the class that failed probably did so due to problems in instruction and not because of a test reliability/validity problem.

GROUP I

Place the CRTs that meet the standard of an 80% pass rate in Group I. These CRTs have the best chance of being reliable, and content valid. If your milestones allow it, return to this group and study these tests, but for now you must turn your attention to Group II.

We will now discuss methods of evaluating CRTs in Group II. You should use these same methods in studying Group I tests, if you have the time.

GROUP II

The CRTs in Group II are those tests which failed the standard of an 80% pass rate for all graduating classes studied. It is possible that there will be CRTs in this group that are reliable and content valid, but failed to meet the Eighty Percent Rule. A pass rate of less than 80% for a class could be due to several variables other than poor CRTs. For example, a class could include students that did not meet course prerequisites, the instruction could have been poor, the students may have not been motivated to study, etc. The

DOES evaluator must make this assessment based upon logical, professional research. How you will do this is the subject of our next lesson.

■ PRACTICE EXERCISE

Answer each question below in the spaces provided. You can use the workbook, job aids, or references to answer the questions. When you are finished, check your answers, clear any problems you have with the course manager, then complete the END-OF-LESSON EXERCISE.

1. **TLO:** The soldier is provided an M203 grenade launcher and appropriate cleaning gear. The soldier must clean the M203 grenade launcher using proper equipment, substances, and detailed cleaning techniques.

   CRT: Given a list of steps for cleaning the M203 grenade launcher in random order, the soldier will correctly list the proper sequence of cleaning the M203 grenade launcher in five minutes or less.

   Does this CRT express content validity? _____
   Why or why not?

2. **TLO:** Given an M203 grenade launcher and proper ammunition, the soldier will engage a target with the grenade launcher IAW TM 9-1010-221-10 (40MM Grenade Launcher M203).

   CRT: Given an M203 grenade launcher and four rounds of 40mm HE, DP, or practice ammunition, the soldier must obtain effect on target at a range of 100-150 meters using both the leaf sight and the quadrant sight IAW TM 9-1010-221-10.
   Does this CRT express content validity? _____
   Why or why not?

3. A new CRT has been developed to provide an alternate choice for a CRT that currently exists. The new CRT is given to a sample of students who have previously taken the older test just yesterday. In general, the new CRT results are much lower than those of the older test. Is it safe to say that the two CRTs display concurrent validity?_____ Why or why not?

4.

Person	Month #1 Score	Month #2 Score
CPT BARNEY	93	94
MAJ PROMBO	87	85
CPT HERMENEK	65	69
1LT MATTHEWS	57	60

The same CRT was given to the same students 30 days apart. Is it safe to say this CRT is a reliable measure of performance? _____ Why or why not?

5.

Person	Month #1 Score	Month #2 Score
SSG RISCH	55	60
SGT HOMER	72	80
SFC RINER	89	98
MSG	90	100

The same CRT were given to the same students one day apart. A review and critique was given to the students after the administration of the test. Can we determine if this CRT is a reliable measure of performance based upon the data given? _____ Why or why not?

■ ANSWERS TO THE PRACTICE EXERCISE

Answer each question below in the spaces provided. You can use the workbook, job aids, or references to answer the questions. When you are finished, check your answers, clear any problems you have with the course manager, then complete the END-OF-LESSON EXERCISE.

1. **TLO:** The soldier is provided an M203 grenade launcher and appropriate cleaning gear. The soldier must clean the M203 grenade launcher using proper equipment, substances, and detailed cleaning techniques.

   CRT: Given a list of steps for cleaning the M203 grenade launcher in random order, the soldier will correctly list the proper sequence of cleaning the M203 grenade launcher in five minutes or less.

   Does this CRT express content validity? No
   Why or why not?

There is little fidelity between "cleaning" and "list the steps in cleaning." Additionally, the CRT provides a time standard which the TLO does not.

2. **TLO:** Given an M203 grenade launcher and proper ammuni-tion, the soldier will engage a target with the grenade launcher IAW TM 9-1010-221-10 (40MM Grenade Launcher M203).

   CRT: Given an M203 grenade launcher and four rounds of 40mm HE, DP, or practice ammunition, the soldier must obtain effect on target at a range of 100-150 meters using both the leaf sight and the quadrant sight IAW TM 9-1010-221-10.

   Does this CRT express content validity? Yes
   Why or why not?

The CRT measures what the TLO measures.

3. A new CRT has been developed to provide an alternate choice for a CRT that currently exists. The new CRT is given to a sample of students who have previously taken the older test just yesterday. In general, the new CRT results are much lower than those of the older test. Is it safe to say that the two CRTs display concurrent validity? No
Why or why not?

The new CRT should have approximately the same results as the old CRT to be concurrently valid with the old CRT.

4.

Person	Month #1 Score	Month #2 Score
CPT BARNEY	93	94
MAJ PROMBO	87	85
CPT HERMENEK	65	69
1LT MATTHEWS	57	60

The same CRT was given to the same students 30 days apart. Is it safe to say this CRT is a reliable measure of performance?
No Why or why not?

One month is probably too long between administra-tions. There is too much time to forget the material tested or reinforce old learning.

5.

Person	Month #1 Score	Month #2 Score
SSG RISCH	55	60
SGT HOMER	72	80
SFC RINER	89	98
MSG	90	100

The same CRT were given to the same students one day apart. A review and critique was given to the students after the administration of the test. Can we determine if this CRT is a reliable measure of performance based upon the data given? No
Why or why not?

Giving the same CRT within 24 hours allows for memorization of the questions. Providing a review and critique of the CRT introduces additional learning between test administrations.

■ LESSON REVIEW AND SUMMARY

1. TRADOC Regulation 350-7 discourages norm-referenced testing.

2. Reliability refers to the extent to which a test yields consistent scores.

3. Validity is the extent to which a test measures what it is supposed to measure.

4. Content Validity deals with how well a test corresponds with its objective(s).

5. Predictive Validity compares students' results on the CRT with some other suitable performance measure taken at a later time, when they are actually on the job for which they have been trained.

6. A test may be reliable and still not be valid.

7. A test that is not reliable can never be valid.

8. It is best to review the CRTs of at least four graduating classes and, at minimum, 100 to 150 students who have taken each test.

9. A good standard to use in separating CRTs for immediate scrutiny is the Eighty Percent Rule. Eighty percent of the students in 100% of the classes must pass each CRT.

END-OF-LESSON EXERCISE

Answer each question below in the spaces provided. You can use the workbook, job aids, or references to answer the questions. When you are finished, see your course manager for feedback on the exercise.

1. If a DOES evaluator completes Phase 1 correctly and follows the Eighty Percent Rule in separating CRTs into Group I and Group II as described in this lesson, then the CRTs in Group I have the best probability of being _____ and _____.

2. Over a period of classes an instructor found that students who took retests of a particular CRT had fluctuating scores. It is safe to say that this CRT is _____.

3. Content and Predictive Validity are all concerned with whether a test actually measures _____ _____.

4. Is it safe to say that tests that are not valid can never be reliable?
   Yes or No? _____

5. If time permits in the evaluation of student leaning, the CRTs from Group I should be studied in the same manner as the CRTs in _____ _____.

6. What should passing results on a CRT **predict**? _____ _____

7. **TLO:** _____
   Given the appropriate tools, perform routine preventive maintenance on the 45 KW generator as specified in the operating and maintenance manual for same, within 30 minutes.

CRT: In front of you is a 45 KW generator and the appropriate tools. Perform routine preventive maintenance on the generator as specified in the operating and maintenance manual. You have 30 minutes to complete this task.

Is this CRT content valid with the TLO? _____
If it is not content valid, state the reason: _____
_____
_____

8. **TLO:** Execute proper walking motions in a low gravity environment such as the moon.

CRT: Make three steps in a gymnasium using the proper techniques for a low gravity environment.
Is this CRT content valid with the TLO? _____
If it is not content valid, state the reason: _____
_____
_____

9.

Person	Week #1 Score	Week #2 Score
PV1 DOORS	73	74
SP4 BINOTZ	85	83
CPL BEE	95	99
SGT HENWAY	65	68

Would these CRT scores be considered reliable measures of performance for a performance-oriented CRT? Explain your answer. _____
_____
_____

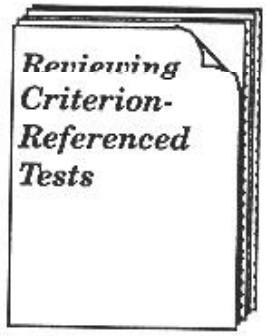
10.

Person	Week #1 Score	Week #2 Score
PV2 HOLCOLM	95	93
SSG HOYLE	87	62
SGM RIGHTWAY	65	89
SFC MILLIAGAN	73	43

Would these CRT scores seem to indicator that this performance-oriented test is a reliable inidcator of performance? Explain your answer. _____
_____

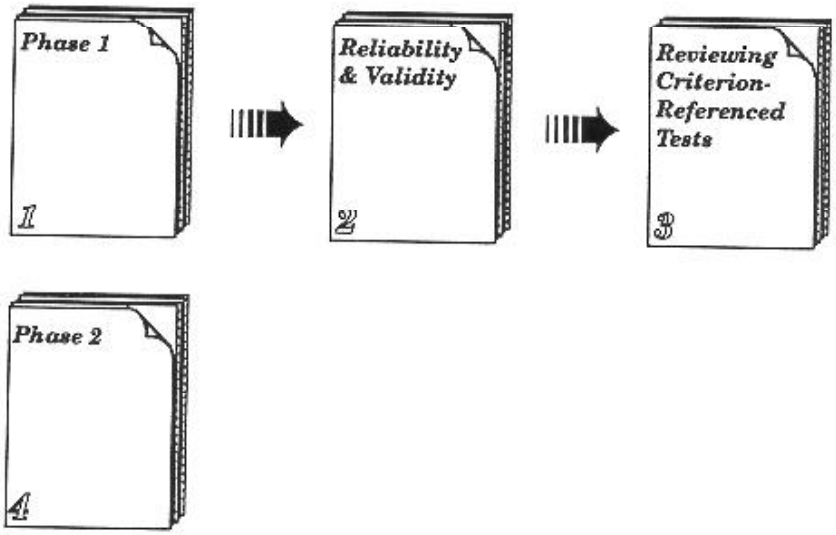
11. Which CRT (Questions 9 & 10) has the best chance of being valid? Explain your answer. _____

LESSON 3



Reviewing Criterion-Referenced Tests

MODULE 6 LESSONS



U.S. Army Training and Doctrine Command
Training Development and Analysis Directorate
Ft. Monroe, VA 23651-5000

SEPTEMBER 1992

■ LESSON INTRODUCTION

Now that the CRTs that do not meet the 80% rule have been segregated into Group II, we want to review these tests to see if there are any problems with their basic make up or physical outline. This lesson provides guidance for this review.

■ LESSON OBJECTIVE

The training objective for this lesson of Module 6 is shown below. This objective includes: the **action** you will be able to perform at the conclusion of this lesson, the **conditions** under which you will be able to perform this action, and the **standards** to which you will be able to perform the action.

Conditions - Given the job aids in Job Aid 6, this workbook, and any other references required; and CRT;

Action - You assess the CRT administration.

Standards - You will determine whether instructions and the test are acceptable.

■ LESSON ACTIVITIES

EVALUATING THE CRT

▼.....

The evaluation of a CRT includes a close look at the CRT itself and the way the test is presented to the students. If the CRT is not given under proper conditions along with proper directions, the reliability and validity of the test will be compromised.

Instructions For Examiners

The test examiner must have instructions for administering each CRT. The instructions include the following:

- An outline of exactly how the test should be given to make sure it is given the same way each time.
- An explanation of the way the test will be conducted and scored that should be read **or** given to each student prior to testing.
- A careful description of a correct performance that helps the examiner
  - Observe what correct performance is **and**
  - Score a student's performance as correct or incorrect.

CRT QUESTIONS

▼.....

In order to evaluate the learning accurately, students should be tested only on those objectives derived from approved Critical Tasks. Students should never be tested on objectives for tasks or subjects that are not listed or referenced in the POI or an official change to the Critical Individual Task Inventory. CRTs should be derived from the objectives.

OBJECTIVES

▼.....

The test must effectively evaluate the Critical Tasks by measuring the student's performance on the objectives. All objectives must be covered by the test questions. The items that evaluate objectives should include: critical decisions,

difficult actions, and critical discriminations. Thus test items should measure how much expertise students have acquired by asking them to make critical decisions or perform difficult actions. The ability to perform critical discriminations shows whether a student knows whether an action is/is not required and which of the possible actions to take.

CONDITIONS STANDARDS

Conditions in the test questions should track with those in the objectives. For example, if an objective requires that an action take place under conditions of reduced visibility which include fog, darkness, or smoke, then the test condition must have the same requirements. The standards of the objectives must track with those in the CRT as well. Test standards should be specified in at least two places: the scoring instructions and the student evaluation plan (course grading plan).

CRT INSTRUCTIONS

Test instructions should clearly outline how the test is to be administered. These test instructions should include: testing sequence, placement of personnel and equipment (if applicable), and test administration procedures.

CRT instructions should be clear and complete so examiners do not have to add instructions of their own. The test administrator should read the following six items from the test instructions for the students:

1. **What the student will have to do.**
2. **What the student will see or hear in order to determine when to start the test.**
3. **What conditions the student will perform under.**

4. **What equipment/tools the student will have and can use.**

5. **How much time is allowed for each test.**

6. **What the standards are for a successful completion of a test.**

Scoring instructions should be specific enough to ensure that correct performance is observable and understandable to both the examiner and the student. The examiner must be able to see and measure what the soldier is doing or, when that is not possible, see and measure what the student has done. In either case, the examiner must know **specifically** what to look for to score performance. The test scoring guide and instructions should show one of three different ways to score a CRT: 1) Product, 2) Process, and 3) Combination of process and product. If the performance is the most important, then score the actions being performed. If the product is most important, then score the final product only. Scoring instructions should be written clearly and simply so the examiner and students can understand them.

READING LEVEL ▼.....

A CRT must be written at the correct reading grade level for its audience. If the students cannot understand the test questions or are confused by them, their performance may be negatively altered.

TEST LENGTH ▼.....

If a CRT is so short that the complete critical performance is not evaluated, then the results will affect reliability and validity. An ELO may be a supporting objective for more than one TLO. ELOs that have been previously tested as an integral part of a TLO would not have to be retested as part of another TLO, unless learning analysis indicates that

retesting is required to allow a student to perform the task or for safety reasons. TLOs may also be so complicated/resource intensive that testing in part and generalization of the results across groups/time is the most cost-efficient method.

INTER-RATER RELIABILITY

Performance tests are dependent upon observers to record the results of performance or inspect and score a product for the presence or absence of particular elements. It is this scoring by observation that, unless managed, is frequently a large source of unreliability. Even tests of skills that obviously involve low subjectivity will result in large amounts of unreliable scoring unless directly managed. The DOES evaluator needs to ask about the training of CRT scorers. Is there a viable program that ensures, as much as possible, that different raters will score a given performance very close to the same? The same rule holds true for knowledge-based tests that are free response or completion type.

JOB AID 6D

You will find Job Aid 6d, a Checklist for Evaluating Criterion-Referenced Tests (CRT), to be a handy guide for reviewing CRTs.

■ LESSON REVIEW AND SUMMARY

The manner in which a CRT is given to students may affect students passing or failing the exam. It is necessary for the following criteria to be observed in order to maximize test reliability and validity.

1. Clear, concise instructions for examiners (test proctors) to administer the CRT must be given. They should clearly outline how the test is to be proctored to include: testing sequence, placement of personnel and equipment (if applicable), and test administration procedures.

2. Scoring instructions should be specific enough to ensure that correct performance is observable and understandable to both the examiner and the student.

3. CRT questions (items) must be derived from approved objectives.

4. All objectives must be covered by the CRTs.

5. Conditions, actions, and standards in the test questions should track with those in the ELOs and TLOs.

6. Evaluators should check reading grade level stats that have been computed by the training department.

7. CRT length must be long enough to evaluate critical performance but short enough to realistically fit into a school environment.

8. A lack of Inter-Rater Reliability will destroy the reliability and validity of a CRT if raters are not directly trained in their jobs. Objectivity in scoring test-takers is quite important. An active training program for raters should be in effect for any test requiring more than one person to judge correct responses. This type of training program should be evaluated in the same manner as other training programs.

9. No irrelevant knowledge/behaviors should be tested.

■ END-OF-LESSON EXERCISE

Answer each question below in the spaces provided. You can use the workbook, job aids, or references to answer the questions. When you are finished, see your course manager for feedback on the exercise.

1. Instructions for examiners (test proctors) should include:

   a. _____

   _____

   b. _____

   _____

   c. _____

   _____

2. If five different examiners are rating the performance of students taking the same test, and the examiners are not evaluating the student performance in the same manner, then there will be a problem with _____ _____ which will negatively affect the reliability and validity of the test.

3. Performance tests should measure how much expertise a student has acquired by asking the student to _____ or _____.

4. Students on a CRT complain about difficult words, and many do not finish the exam. This would leave one to speculate that the most obvious problem may be that the _____ is too high.

5. _____, _____, and _____ in test questions (items) on a CRT should match those in the TLOs.

6. If a CRT is so short that critical performance is not sufficiently evaluated, what will be affected?

_____

7. What six items should be read to the students before the CRT is given?

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

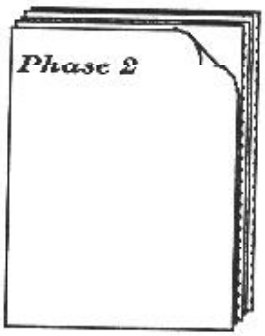
e. _____

_____

f. _____

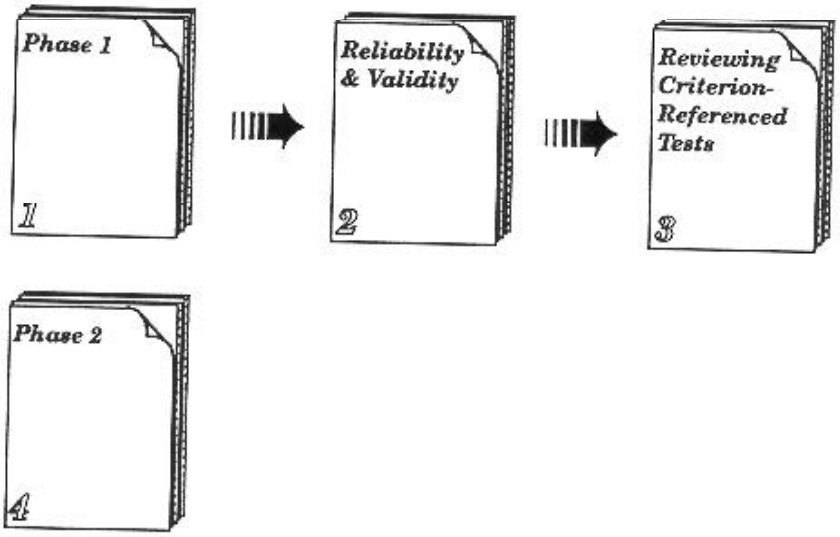
_____

LESSON 4



Phase 2

MODULE 6 LESSONS



U.S. Army Training and Doctrine Command
Training Development and Analysis Directorate
Ft. Monroe, VA 23651-5000

SEPTEMBER 1992

■ LESSON INTRODUCTION

Let's review where we are. You, the DOES evaluator, have determined approved and acceptable TLOs that meet the Eighty Percent Rule and placed them in Group I. You have annotated unapproved or unacceptable TLOs for inclusion in your final report. The TLOs that are approved/acceptable but do not meet the Eighty Percent Rule have been placed in Group II. Group II CRTs have been studied using Job Aid 6d. Any area marked "NO" on the checklist probably is a part of the problem for the low pass rates. Now it is time to talk to the students that have taken the CRTs and the instructors that have taught the material. When you have finished comparing Job Aids 6d, 6e, and 6f, you should be able to recognize trends concerning the cause of the low pass rates. If there is time, you would then use Job Aids 6d, 6e, and 6f to determine if there are deficiencies in the CRTs in Group I.

■ LESSON OBJECTIVE

The training objective for this lesson of Module 6 is shown below. This objective includes: the **action** you will be able to perform at the conclusion of this lesson, the **conditions** under which you will be able to perform this action, and the **standards** to which you will be able to perform the action.

Conditions - Given the job aids in Job Aid 6, this workbook, and any other references required and selected feedback data;

Action - You will assess feedback from students and instruction.

Standards - You will correctly identify problem areas.

■ LESSON ACTIVITIES

PHASE 2 ▼.....

The use and comparison of the data in Job Aids 6d, 6e, and 6f to isolate possible causes of poor test reliability and validity is Phase 2. This process may be varied in nature depending upon the actual use of the job aids and time allotted the evaluator to complete the evaluation.

STUDENT QUESTIONNAIRES

Students can be a valuable source of vital information in judging testing and instruction. Question students who were present for training when an observer could not be present. Several but not all students will need to be questioned to get a consistent answer to any one question. At least one half of the questions should be constructed to get "Yes" or "No" answers. Do not expect the students to give detailed answers from memory. Ask the questions in words that have meaning for the students. Ask questions about experiences that also have meaning for the students.

HOW MANY QUESTIONS?

Ten to fifteen questions is a good number. If you have more than 15 questions, get two different groups from the training in question. Give some questions to one group and the remaining questions to the second group.

EXAMPLES

Some of the kinds of questions students can be asked are below.

- Were instructors available when you needed them? _____.
- Did you have a _____ (tool, handout, piece of equipment) when you needed it?
- Did you have your own copy of _____ (handout)?
- Do you know what _____ (a term or concept) means?
- Was the _____ (TLO/ELO) demonstrated for you by the instructor?

- Could you _____ (see, hear, understand) the demonstration of _____ (TLO, ELO, step)?
- Did you get a chance to practice the _____(TLO, ELO, step)?

Did an assistant instructor watch you during practice, correcting your errors as you went along?

_____

QUESTIONS ABOUT EVENTS OUTSIDE OF FORMAL TRAINING

▼.....

The DOES evaluator may need to ask about how confident students feel about performing a training task and what they know about events occurring outside the formal training station. Be careful to only use confidence ratings as indicators of morale, not proficiency. Soldiers tend to give unrealistic high estimates of their ability to perform the task in question. Soldiers/students can answer questions about what is happening to them in a training environment. You can question them on:

- Rumors.
- Things that happen during non-training time (rewards/punishments for good/poor performance, etc.).
- Administrative matters (post-training assignments, bonuses, UCMJ Articles, pay and allowances, etc.).
- Any item on which they have information or misinformation that could affect training outcomes.

Questions should be kept simple. Carefully word each question so it means the same thing to each student. Avoid two questions in one sentence and keep the number of answer categories small. Some examples of questions that can be asked are:

- Do you know how to be a loader on an M-1 Tank?

_____ Yes
_____ Need More Training First
_____ No

- Do you understand NBC Spot Report training?
  Most _____ Some _____ None _____

- Can you prepare an NBC Spot Report?

- Did you get to practice assembly/disassembly of the M240 Machinegun after instruction?

  Yes _____ (How many times?) _____
  No _____

STUDENT COMMENTS

Student Comments can provide useful information about instructional quality, course materials, instructional levels, and performance-oriented testing via Criterion-Referenced Tests (CRT). Ask students to explain reasons for their answers. Watch for expressions that show students do not understand questions; if these occur, clarify points. Questionnaires must be carefully planned, designed, "de-bugged," and take into account students' abilities to understand specific questions and express their opinions in writing. Turn to Job Aid 6e and review the Student Questionnaire provided.

INSTRUCTOR QUESTIONNAIRES

Instructors are another source of important information. From their perspective, They can add to your knowledge of "what" happened during the training. Instructors can give a different kind of data than students. Furthermore, you can ask them more questions. They can provide information about learning difficulties experienced by students, specific items in course materials that were unclear, adequacy of training facilities, and students' abilities to perform tasks. Instructors, like students, may be interviewed for their opinions. Keep the interviews short and to the point. Note Job Aid 6f, an Instructor Questionnaire.

■ LESSON REVIEW AND SUMMARY

Phase 2 consists of comparing the data the DOES evaluator has gleaned from reviewing the Criterion-Referenced Tests (CRT), interviewing students, and interviewing instructors. There are numerous valid and reliable survey techniques which can be used and employ a wide range of scales/responses. Information from the three sources should indicate the causes of high student fail rate, reliability problems on the CRTs, or validity problems on the CRTs. These causes should be written into your final report after consultation with school officials to see if they have solved the problems. If the causes have already been corrected, they may not appear in the final report at all. If they have not been corrected, the report may include them to point out causes and suggest solutions.

■ END-OF-LESSON EXERCISE

1. One half of the questions on Student Questionnaires should be "YES" or "NO" type with space for the students to comment if they so desire. True or False?

2. Barracks field day from 1800 to 2400 the night before a CRT is a(n) _____ that could affect pass rates on the test.

3. Instructors are sources of information concerning, at least, the following:

a. _____

b. _____

c. _____

d. _____

4. Completing Phase 1 and Phase 2 in the Evaluation of Student Learning should result in _____
_____
_____

■ END-OF-MODULE EXERCISE

Congratulations, you've just completed the sixth module of the Training Evaluators Course. You are now ready to complete the End-of-Module Exercise.

As we discussed in the Course Introduction, after you complete the End-of-Module Exercise, your course manager will grade it, and you will receive either a "GO" or a "NO GO" for the module. You might want to quickly review the materials in the lessons that make up this module before taking the End-of-Module Exercise.

When you are ready, take your course map to the course manager. The course manager will give you further directions for taking the End-of-Module Exercise.

Good Luck!

■ REFERENCES AND SUGGESTED READINGS

U.S. Army Field Manual FM 25-1: Training

U.S. Army Field Manual FM 25-5: Training for Mobilization and War

U.S. Army Field Manual FM 25-100: Training the Force

TRADOC Pam 25-33: Army Training Glossary

U.S. Army Reg 350-1: Army Training

U.S. Army Reg 351-1: Individual Military Education and Training

TRADOC Reg 350-6: Initial Entry Training (IET) Policies and Administration

TRADOC Reg 350-7: Systems Approach to Training (SAT)

TRADOC Reg 350-24: Basic and Advanced NCO Training in TRADOC Noncommissioned Officer Academies

TRADOC Message 221430Z Jun 84, Subject: Officer/NCO Academic Testing Policy

TRADOC Message 051314Z Jun 86, Subject: Clarification of Officer Basic Course Retest/Recycle Policy

TRADOC Message 041830Z May 87, Subject: Testing Policy for Non-commissioned Officer Education System (NCOES) Courses